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Mindfulness, Facets of Big Five Personalities, and Psychological Health

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The University of Southern Mississippi

MINDFULNESS, FACETS OF BIG FIVE PERSONALITY,
AND PSYCHOLOGICAL HEALTH

by

Nicholas J. Schmidt

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

August 2013

ABSTRACT

MINDFULNESS, FACETS OF BIG FIVE PERSONALITY,
AND PSYCHOLOGICAL HEALTH

by Nicholas J. Schmidt

August 2013

The concept of mindfulness, nonjudgmentally being aware of one's environment, whether internal or external, has long been a core component of eastern religions, such as Buddhism, for over 2,000 years. Not until relatively recently, however, has the concept of mindfulness gained attention in Western psychology. As mindfulness has come to be associated with both psychological health and the absence of psychological distress, its practice has begun to be implemented in a number of cognitive behavioral therapies for a wide range of mental disorders.

The purpose of the present study was to examine the possible relationships between facets of measures used to quantify mindfulness and five factor personality, with special emphasis placed on the possibility of mindfulness mediating between Openness and psychological flourishing as well as Neuroticism and psychological distress. Results using a structural equation model failed to support the role of mindfulness as a mediator of the relationships between Openness and flourishing or Neuroticism and distress, but did shed light on numerous other relationships between facets of mindfulness and components of five-factor personality.

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A Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

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CHAPTER I

INTRODUCTION

Mindfulness is a longstanding concept, believed to have been first noticed in the Buddhist psychology over 2,500 years ago. Relatively recently, its utility as a psychological tool has been brought into the Western view of clinical psychology. Although the mechanisms by which mindfulness is beneficial largely rest in the realm of speculation, it has nonetheless been incorporated into a number of therapeutic interventions and theoretically utilized in a number of psychological schools, and it has frequently been found in relation with psychological health, both the absence of psychopathology and the presence of psychological flourishing.

In this study, I first discuss the concept of mindfulness and its introduction to Western psychology, including a review of the research aimed at producing an operational definition of the construct. Second, I explore mindfulness's relationship to a number of psychological phenomena deemed of importance to the clinical community. Specifically, evidence looking at mindfulness's relationship with psychological health and lack of psychopathology is examined. Third, I examine personality traits which may be related to mindfulness, and which may have an effect on mindfulness's influence on psychological states. Finally, I briefly review the literature examining positive psychological states, which are pertinent for the purposes of this study.

The goal of the present study was to examine the possible relationships between facets of measures used to quantify mindfulness and five factor personality, with special emphasis placed on the possibility of mindfulness mediating between Openness and psychological flourishing as well as Neuroticism and psychological distress.

Summarizing these findings, I describe the present results and provide a rationale for future directions, discussing the current study's implications for the clinical community as well as the contribution to the psychological literature.

Roots of Mindfulness

The concept and practice of mindfulness is longstanding and is believed to have begun in Eastern traditions associated with Buddhism. Germer (2005) describes it as being a central tenet of the language of *Buddhist psychology* over 2,500 years ago, and Kabat-Zinn (2003) describes it as that core of Buddhist meditation discovered by the historical Buddha as a mechanism for assuaging causes of human suffering. Within the Buddhist tradition, mindfulness is thought to reduce suffering by promoting equanimity (the willingness to accept the reality of a situation with both *good* and *bad* aspects) and kindness (one treats moments, or internal and/or external events in one's life, aversive or otherwise, with *loving-kindness*; Germer, 2005). Rather than being exclusive to Buddhism and the jargon of the religion, however, Kabat-Zinn (2003) extends mindfulness past the religious and into the secular, stressing the universality of the concept and practice of mindfulness as something that is applicable to the world in general, just as focusing one's attention is a universal phenomenon.

Not all focusing of attention is practicing mindfulness, however. Kabat-Zinn (2003) argues that the focusing of one's attention becomes "mindful" when it "emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience in moment by moment" (p. 145). It is not, therefore, turning one's attention ruminatively to some past event, or even noticing some present event with coinciding judgment of it as *good* or *bad*. Contrary to what one might think of when

envisioning a Buddhist monk lost in some arcane mindfulness meditation, being mindful is not the same as being in some dissociative state. To the contrary, mindfulness is being *more* aware of one's surroundings, both external and internal. This fact is evident in a study by Baer, Smith, Hopkins, Krietemeyer, & Toney (2006), where measures of mindfulness were found to be inversely related to scores on a self-report measure of dissociation. In this same study, the researchers found mindfulness to be different from alexithymia, suggesting that lack of emotional reactivity to events observed by mindful individuals is not due to any lack of interest or inability to understand feelings. To the contrary, individuals practicing mindfulness are thought to be both curious to the inner workings of their mind and more apt to identify their emotions. Finally, mindfulness is not the same as absent mindedness, but was found by Baer et al. (2006) to be inversely related to common mistakes made by individuals acting in a careless manner. For attention to be mindful, then, it must be purposeful, present, and nonjudgmental. Indeed, Baer et al. (2006) note that mindfulness can be developed and utilized by persons willing to undertake such discipline in their everyday life and in guided practice. Once one is able to experience mindfulness in a meaningful context, Kabat-Zinn (2003) argues the individual is better equipped for existing in the moment, actively pursuing a way that reduces suffering.

Indeed, many of the practices coming from the East (e.g., physical practices such as yoga and mental practices such as meditation) which aim to purposefully and nonjudgmentally aid in the focusing of one's attention in the present moment include mindfulness as a core component. Germer (2005) reports that the utility of mindfulness as a skill was incorporated into many traditions, from the meditation practices of Hinduism,

eastern Mysticism, Zen Buddhism, and extending into the West in early Christianity. Tidbits of writing appearing in the West resonate with hints of mindfulness, such as when Thoreau (1910, p. 147) speaks of the benefits he received from the many hours he spent simply attending with the senses to life around Walden pond. William James makes mention of mindfulness, stating that the process of reigning in one's attention repeatedly is “the very root of judgment, character, and will.” (James, 2001, p. 95). Emily Dickinson mindfully noted that “Forever – is composed of Nows” (as cited in Leiter, 2007, p. 77), which happens to lend itself nicely to the concept of present-centeredness also embraced by those practicing the mindful precepts found in Eastern traditions.

Despite these early roots and relative to mindfulness's longstanding tradition in the East, its history in Western psychology is much shorter by comparison (Baer et al., 2006). Specifically, Baer et al. (2006) point out that mindfulness has been adopted as a technique within a variety of recent psychotherapies, including but not limited to Acceptance and Commitment Therapy (Hayes, Strosahl, & Wilson, 1999), Dialectical Behavior Therapy (Linehan & Kehrer, 1993), and Mindfulness Based Stress Relaxation (Kabat-Zinn, 1982). Together, many of these psychotherapies have been termed *thirdwave* psychotherapies, referring both to their roots in cognitive-behavioral therapy and their departure from that tradition, choosing mindfulness/acceptance techniques over the traditional thought-challenging tasks (Hayes, Follette, & Linehan, 2004). According to Baer et al. (2006), these therapies see mindfulness as a psychotherapeutic tool which can decrease some of the emotional symptoms associated with mental illnesses including depression, anxiety, and everyday stress. What those of the Bhuddist tradition might have considered to be under the umbrella of *human suffering*, psychologists are recognizing as

various mental disorders. These third-wave psychotherapies incorporate the practice of mindfulness, then, just as it has been used for thousands of years to alleviate said human suffering.

CHAPTER II

OPERATIONALIZATION AND MEASUREMENT OF MINDFULNESS

In accord with Western tradition, however, there is a desire to objectively measure the effects of any technique we might use in psychotherapy, to break down its components, and to understand its mechanics. Along these lines, efforts have recently been made to understand mindfulness and its role in third-wave psychotherapies (Germer, 2005). Before one can begin to study whether mindfulness is an effective tool for the therapy room, an objective, operational definition of mindfulness must be derived (Baer et al., 2006). To this extent, a few researchers have spent the last decade exploring ways of quantifying and measuring to what extent persons exhibit thoughts and behaviors that can be described as purposeful, present, and nonjudgmental.

Honing in on a working definition of mindfulness, Germer (2005) considers many definitions used in the literature, ranging from the simplistic “moment-by-moment awareness” (p. 6) to the more technical. While ultimately concluding that mindfulness eludes a perfect verbal definition due to its nature as a personal experience, Germer notes that common definitions of the experience include other sub-constructs such as openness, awareness, and nonjudgment, although these are not to be confused as being all-or-nothing facets. Indeed, Germer cautions that some of these identified facets may require a balance in relation to other facets. Some facets might require the presence of other phenomena for the benefits of mindfulness to arise, being useless (or even detrimental) without the presence of the other attributes. For example, one might be aware of the external environment around oneself, but by lacking nonjudgment one may still be experiencing acute emotional responses. Mindfulness, then, is seen as more than the sum

of these facets, but also the interaction of them, each contributing to the mindful personal experience.

Not until recently have these empirical endeavors been a recurring topic in the scientific literature. Bringing mindfulness into Western psychology, with the importance of empirically supported therapeutic methods paramount, working definitions of the construct have evolved. Davidson (2010) points out the importance of making known the definition of mindfulness to be used in any work examining its relationships with other psychological variables of interest. Along these lines, several self-report measures have been developed for operationally defining the construct of mindfulness.

In reviewing the various measures available for quantifying the construct of mindfulness, it appears evident that the test creators' conceptual understanding of the construct guides their development of the measure. For instance, in one of the earliest measures of mindfulness, the Mindful Attention Awareness Scale (MAAS, Brown & Ryan, 2003), mindfulness is thought of as a "unique quality of consciousness that is related to a number of well-being constructs" (p. 822).

In the Southampton Mindfulness Questionnaire (SMQ), Chadwick et al. (2008) describe the instrument as being composed of items designed to measure four related constructs, each conceptualized as a bipolar continuum. These four constructs include what they term decentered awareness (described as recognizing thoughts in relation to a wider context of phenomena), one's willingness to stay with a cognition (i.e., versus cognitive avoidance), accepting one's thoughts non-judgmentally, and one's ability to allow thoughts to pass (i.e., versus rumination). The SMQ, then, features items based on a

foundation structurally different, yet ontologically similar, to other questionnaires based on differing theories of mindfulness.

In another study, Baer et al. (2006) administered five different mindfulness questionnaires, which were presented in randomized succession to a large sample of undergraduate students. Items from all five questionnaires were then pooled together in a factor analysis. Of all the items, the researchers found evidence for five distinct factors which were given the following labels: 1) Nonreactivity to inner experience, 2) Observing thoughts/feelings, 3) Acting with awareness, 4) Describing with words, and 5) Nonjudging of experience. Grouping items loading onto these five factors into a single questionnaire, the Five Facet Mindfulness Questionnaire (FFMQ) was developed with the capability not only to measure mindfulness in general populations, but also to discern results from those having extensive mindfulness practice. It is this measure that was used to quantify the construct of mindfulness for this study.

CHAPTER III

MINDFULNESS AND PSYCHOLOGICAL HEALTH

In this section, I will explore mindfulness's relationship with psychological health and lack of psychopathology. Indirect evidence for the potential utility of mindfulness as an adjunct to psychotherapy can be seen in its inclusion in a wide variety of therapies. Found in Mindfulness Based Stress Relaxation, Mindfulness Based Cognitive Therapy, and as a way of preventing relapse following successful treatment of depression with Cognitive Behavioral Therapy, Nanda (2010) explains its incorporation in a case study using a combination of existential based and cognitive therapies for the treatment of depression. In this article, the author notes mindfulness's similarity to the acceptance of the human condition inherent in existential-based psychotherapies and its practical usefulness as a tool that the client can use every day, especially when faced with negative moods he may have hoped to have overcome.

In a study attempting to examine the effects of a quick, 15-minute mindfulness exercise, Arch and Craske (2006) recruited university students who reported no experience with meditation and exposed them to a number of either positive, neutral, or negative picture slides. Participants were assigned to either the experimental group, which received the brief mindfulness exercise (described to them as a breathing exercise), while the control groups were exposed to 15 minutes of direction encouraging the participants to either worry about a number of different areas (e.g., money, work, school, safety) or to merely let their attention wander without dwelling on any one thing.

Measures included by Arch and Craske (2006) for this study included a short form of the Positive and Negative Affect Schedule (PANAS), a single question regarding

affect (rating from worst, -50, to best, +50), a behavioral measure (the number of negative slides participants were willing to endure before stopping after the experiment), and heart rate. Results of the short PANAS showed that participants receiving the focused breathing exercise were less variable in their scores when either neutral, negative, or positive slides were shown. By contrast, those in the unfocused attention and worry control groups showed significantly more variability when presented with negative slides. Heart rates did not differ across groups, but were affected by the content of the picture slides. Finally, the behavioral measure of allowing participants to decide how many negative slides participants watched before ending the experiment showed that those in the focused breathing group were significantly more willing to continue with the watching of negative slides compared to the unfocused attention group, although no significant difference was found when compared to the worry group.

In their discussion, Arch and Craske (2006) suggest that these results indicate mindfulness both enables persons to view neutral stimuli in a more positive light, and also makes them more willing to endure the presence of negative stimuli. If these results are extrapolated to an understanding of how mindfulness might be related to decreased psychopathology, then, one might postulate that persons practicing mindfulness are able to express more positive affect in response to neutral stimuli occurring in their everyday lives, as well as being able to endure the negative things in their lives with less emotional distress. The lack of a difference between groups regarding heart rates is especially interesting, then, because it might suggest that even when persons have the same physiological reactions to a set of stimuli, the interpretation or mindful reaction with

willingness not to be distressingly entwined with the event, allows persons to achieve more positive affect.

Hypothesizing that one mechanism of mindfulness's relationship with decreased psychological distress could involve memory, Alberts and Thewissen (2011) constructed an experiment aimed at investigating memory for words with either positive, neutral, or negative associated values (e.g., words that are likely to evoke a positive reaction versus those likely to evoke a negative emotion). Specifically, the authors exposed participants to either a brief mindfulness breathing exercise (the experimental group), or merely told participants to try to do a good job (the control condition). Results indicated that those individuals receiving the mindfulness exercise prior to introduction of the memory task recalled a significantly fewer proportion of negative words to overall words compared to those participants in the control condition.

Alberts and Thewissen (2011) suggests that memory, then, might be a mechanism by which mindfulness has an effect on a person's mood, with those persons who either practice and/or contain the attribute of mindfulness being less prone to holding onto negative stimuli in their environment proportional to other neutral and positive stimuli. The authors further explain that, because no differences in mood were found between groups, the effect on memory cannot be attributed to a relationship between one's level of mindfulness and one's subjective mood. One limitation that should be noted, however, concerns the difference in time given to participants between signing consent forms and beginning the actual task. Because of this, it remains unclear whether the effects of recall differences are due to the implementation of the mindfulness exercise, or merely because those persons in the experimental condition received 12 minutes of time prior to being

tasked with the memory exercise (which the control condition did not receive). The possibility of memory being involved as a mechanism of mindfulness's effects on psychological well-being, however, remains an interesting idea.

In a recent study examining Mindfulness Based Cognitive Therapy's (MBCT) effects on persons with mild to moderate psychological difficulties, Schroevers and Brandsma (2010) recruited community participants with about half reporting either a current or past anxiety or depressive disorder. Of note in this study, however, was the use of measures not only for assessing level of psychopathology but also an indicator of psychological health (positive affect, as measured by the PANAS).

Utilizing a pre-post design, participants were administered the PANAS as well as various measures of mindfulness prior to being treated with an eight-week manualized cognitive-behavioral therapy with a heavy mindfulness component. At the end of the eight weeks, following a second administration of psychological measures, participants showed statistically significant medium-sized decreases in negative affect coupled with statistically significant increases in positive affect. Furthermore, measures of mindfulness confirm that the mindfulness component of the therapy did, in fact, lead to significant and medium-sized increases in various components thought to be a part of the construct of mindfulness (i.e., awareness of experience, observing/attending to experience, disengaging from unpleasant experience, and acceptance without judgment).

Although the Schroevers and Brandsma (2010) study certainly lends some insight into the effectiveness of mindfulness based therapies, the use of pre-post design makes medium-sized effect sizes less impressive, largely due to the lack of a viable control group. Regardless, however, it remains that 1) the intervention led to increases in

mindfulness and 2) those increases in mindfulness coincided with increased positive affect and decreased negative affect. It could be a more convincing argument for the positive effect of mindfulness if the authors had done an analysis to determine if increases in mindfulness mediated the decreases in negative affect and increases in positive affect.

Bernstein and Tanay (2011) examined mindfulness as a predictor of psychopathology among adults reporting exposure to traumatic experience. Obtaining a sample of persons from a study on cigarette smoking who described at least one traumatic experience in their past, the researchers administered a variety of psychological measures of psychological distress as well as a measure of mindfulness (the Mindful Attention Awareness Scale, MAAS). Results indicated that persons scoring high on mindfulness exclusively belonged to that group of participants who, although having experienced a traumatic event, lacked current symptoms of psychopathology, having scored lowest on measures of anxiety, depression, and symptoms of Posttraumatic Stress Disorder (PTSD). These findings are especially noteworthy because of the population under examination in this study, and the relationship that the authors note is typically found between experience of trauma and subsequent development of psychological disorder. One limitation of this study, which the authors themselves note, is that their focus is exclusively on the absence of psychopathology, rather than also examining the relationship between mindfulness and psychological health. For this reason, Bernstein and Tanay (2011) suggest more studies not only exploring further the inverse relationship between mindfulness and psychopathology but also the relationship between mindfulness and psychological health.

This seems to be an important aspect to be considered by those researching mindfulness, one which Geschwind, Peeters, Drukker, van Os, and Wichers (2011) seem to take to heart in examining possible mechanisms by which mindfulness might both alleviate and protect against symptoms of depression. Specifically, Geschwind and colleagues (2011) recruited participants who had both a history of depression as well as residual symptoms of depression at the time of the study. Participants randomly assigned to the experimental group were exposed to MBCT consisting of eight weekly group therapy sessions, as well as assignments of daily mindfulness exercises.

Because positive affect is related to resilience against depression, Geschwind et al. (2011) hypothesized that there would be a relationship between mindfulness and positive affect, as measured using an experience sampling method (ESM) approach, where participants were asked to rate their affect on a 7-point Likert scale an average of once every 90 minutes (when a tone would sound on a wristwatch that they carried with them). While measures of psychopathology and psychological distress were measured similarly to other studies described (e.g., with the Hamilton Depression Rating Scale, Penn State Worry Questionnaire, etc.), the researchers extrapolated feelings of positive versus negative affect from the ESM responses, and quantified the amount of reward experienced by a person on a given task by examining responses immediately following whatever the participant happened to have been doing at the time of the ESM cue.

Results indicated uniformly decreased scores on measures of negative affect and psychopathology both compared within the experimental group (pre-post) and between the groups (experimental and wait-list control) at post-treatment time. Importantly, Geschwind et al. (2011) note that the reduction in depression scores was related to

significantly higher reported positive affect and reward experiences. The authors use this finding to suggest that mindfulness might affect a change in depressive symptoms by increasing the likelihood that one enjoys the positive affect that occurs in his or her life, and gains greater sense of reward from daily activities.

In a randomized clinical trial, Roemer, Orsillo, and Salters-Pedneault (2008) examined the benefits of an Acceptance-based Behavior Therapy utilizing mindfulness components in the treatment of Generalized Anxiety Disorder compared to a wait-list control. Utilizing a treatment manual described in an earlier study, Roemer et al. describe the treatment as incorporating components of awareness of emotions, the relationship between judgment of such internal experiences, and daily mindfulness practice.

Results reported by Roemer et al. (2008) showed decreases in a variety of symptoms associated with Generalized Anxiety Disorder, as measured by clinical severity ratings, the Penn State Worry Questionnaire, and the DASS ratings for anxiety and stress. The authors also note secondary outcomes of decreases on the Beck Depression Inventory. Whereas these differences were most noteworthy when compared within the experimental group as a pre-post design, the results also held when differences were examined at post-treatment between the experimental and control groups.

Beyond mood disorders, some research has recently shown mindfulness to be an effective tool for the treatment of psychosis, commonly associated with schizophrenia and found in inpatient settings. Bach (2000) investigated the effects of Acceptance and Commitment Therapy (ACT), which utilizes a strong mindfulness component in teaching participants acceptance of internal and external stimuli. Administering ACT to patients with psychosis (predominantly delusions and auditory hallucinations), the researcher

reported significantly less believability in the hallucinations and delusions as reported by the patients, as well as subsequent decreases in distress related to the experience of positive symptoms associated with schizophrenia. The economic benefits of this treatment are outlined, and the author estimates savings of around \$4,000 per patient when one considers the amount of time that persons receiving ACT were able to avoid readmission compared to those requiring readmission.

In review, mindfulness's efficacy as an adjunct to many empirically supported treatments emphasizes the importance of research further examining the nature of its relationship to factors often associated with mental illness such as psychological distress, negative affect, anxiety, worry, and depressive thoughts. Further research is also warranted examining the relationship between mindfulness and factors associated with psychological health such as positive affect and resilience against relapse.

CHAPTER IV

MINDFULNESS AND BIG FIVE PERSONALITY

In this section, I will examine personality traits that may be related to mindfulness and which may interact with the effect of mindfulness on psychological states.

Researchers have recently begun to investigate which personality traits are related to mindfulness. In a meta-analysis, Giluk (2009) found mindfulness to be positively correlated with trait positive affectivity and trait Conscientiousness, and inversely related to Neuroticism and trait negative affectivity. Correlations with other Big Five personality traits, including Openness, Extroversion, and Agreeableness were positive but small. One drawback of this meta-analysis is that it was limited in the depth it was able to attain.

Specifically, by grouping together measures of mindfulness and Big Five personality traits, the utility of more narrow-bandwidth subscales was eliminated. Giluk (2009) mentions that nuances in facet-level subscales are important, as they can frequently point to unique relationships among personality characteristics and other variables of interest. For example, in her discussion, she states that such facets might account for the relationship between two variables, which might also be dampened by other facets within the same construct that are less related. Specifically, she mentions that both mindfulness and openness to experience emphasize curiosity, attention, and receptivity, which could explain the relationship between the two constructs. However, the relationship between mindfulness and Openness was found to be much less than anticipated, despite the seemingly noteworthy face valid similarities between the two (e.g., mindfulness being partly an openness to experiencing internal and external stimuli

without judgment). It is possible that the relationship between mindfulness and more specifically relevant facets of Openness would be stronger.

Giluk's (2009) meta-analysis uncovered that, similar to findings from other studies, mindfulness's strongest correlation was an inverse correlation with Neuroticism, followed by a strong positive correlation with Conscientiousness. In her discussion, she states that this could make sense given the idea that mindfulness is a conscious and intentional awareness, not merely a passive or habitual Openness to the experiences around a person. Surprisingly, however, she points out that Conscientiousness is one of the least studied personality constructs examined by mindfulness researchers. From this meta-analysis, it then seems important that one include not only Conscientiousness as it relates to mindfulness, but also to include an examination of individual facets, which could lead to a better understanding than merely looking at the average of the facets as found in each of the broad Big Five domains. Unfortunately, Giluk's (2009) meta-analysis did not include relationships between mindfulness and individual facets of the Big Five traits.

In a dissertation, West (2008) sought to examine the relationship between mindfulness and factors of the Big Five in a sample of adolescents. She stated that because mindfulness and personality are both multi-faceted constructs, it is likely that the relationship between the two is not as simple as it might appear on the surface. This indeed seems to be the case, as West found one of her strongest correlations (behind that of mindfulness inversely with neuroticism) to be between Observation in mindfulness and the trait of Openness. Interestingly, and seeming to contradict Giluk's (2009) meta-analysis, the relationships among various scales of mindfulness and Conscientiousness

were significant but were not the most prominent of the correlations with the Big Five traits (that distinction is saved for Neuroticism's inverse relationship, followed by the positive relationship with Openness). Whereas this study definitely lends more insight with its inclusion of facets of mindfulness (rather than just mindfulness as a singular construct in and of itself), it fails to include an in-depth examination of facets making up each of the Big Five personality traits.

In a study examining the validity of various measures of mindfulness and also their relatedness to Big Five personality traits, Baer et al. (2006) predicted and observed a positive correlation between mindfulness and openness, an inverse relationship between neuroticism and mindfulness, and a nonsignificant correlation between mindfulness and extraversion. Unfortunately, the study did not include an examination of conscientiousness (which Giluk, 2009, mentions as often overlooked, but still important, in the study of mindfulness and personality) and a more in-depth look at the individual facets making up the larger constructs. Leaving these other traits and facets out of the study may give us an incomplete view of a relationship that might be more nuanced than previously expected.

From these studies, it seems plausible that, whereas clear relationships do exist between mindfulness and some factors of the Big Five, the details of such relationships are largely covered up by the averages of the larger traits themselves, masking many potential relationships with facets that could shed more light on both the construct of mindfulness and its relationship with psychological health and psychopathology.

One study, presented in a dissertation by Borynski (2007), used confirmatory factor analysis to examine the relationship between Neuroticism and mindfulness. Of

specific interest was whether the commonly-cited and strong inverse relationship between Neuroticism and mindfulness is due to the possibility that measures (of mindfulness and Big Five personality) of each are measuring the same construct in different ways, or if the constructs (mindfulness and low Neuroticism) are, indeed, separate but related to one another. Borynski (2007) reports goodness-of-fit indices of one-factor models falling well below values that would suggest the constructs of mindfulness and low Neuroticism are one and the same. Instead, the author suggests that the measures of Neuroticism and mindfulness, while related, do measure separate constructs.

Given the multi-faceted nature of both Big Five personality and mindfulness, more research is needed to provide a better understanding of the relationship between these constructs. One of the goals of the present study was to examine such relationships, looking at facets of both personality and mindfulness as they related to factors sometimes associated with mental illness and psychological health.

CHAPTER V

POSITIVE PSYCHOLOGY

In this section, I will briefly review the literature examining positive psychological states, which are pertinent to the study being proposed.

In recent years, a shift has begun where psychologists are examining not just the absence of psychopathology as a sign of health, but also the presence of positive psychological states and traits. Seligman and Csikszentmihalyi (2000) mention that failure to include such positive psychological constructs in an examination of what it means to be mentally healthy leads to a view of the human person that lacks “the positive features that make life worth living” (p. 5). Importantly, Seligman and Csikszentmihalyi (2000) note that not only are positive psychological constructs important for the enjoyment of a worthwhile life, but they also offer resilient features against the negative, psychopathological aspects that for many years have been the focus of clinical psychology.

In essence, Seligman and Csikszentmihalyi (2000) see psychology as a science aimed not just at “fixing” problematic cognitions and behaviors associated with various psychopathologies, but, more importantly, also to model and promote the psychological *flourishing* (Keyes & Haidt, 2003) associated not just with health, but with successful, every day living. For the mental healthcare provider, this implies that not only are we to help persons resolve the problems inherent in psychopathology, but we are also called to nurture the positive traits they have, both as a way of making their lives *worth living* and also to build resilience to protect against future psychopathology.

Seligman and Csikszentmihalyi (2000) identify some areas which they believe are most pertinent to a focus on human strength, virtue, and resilience. Specifically, they mention characteristics such as individual courage, happiness, forgiveness, gratitude, interpersonal skills, capacity for love, faith and spirituality, various individual talents and skills, work ethic, hope and optimism, perseverance, and many others.

Along these lines, the popularity of measures seeking to quantify the presence of such positive attributes can be seen to have risen markedly, from questionnaires aimed at measuring quality of life (WHOQOL Group, 1998) to measuring hope (Snyder et al., 1991), to questionnaires for positive affect (Watson, Clark, & Tellegen 1988) and spirituality (Mascaro, Rosen, & Morey, 2003). It appears that psychologists and researchers are, indeed, rising to the challenge of incorporating characteristics associated with psychological flourishing beyond the mere presence or absence of psychopathology.

With psychological measures aimed at quantifying variables associated with positive psychology, numerous studies have since emerged finding relationships between them and both a lack of psychopathology and increased quality of life, as was emphasized by Seligman and Csikszentmihalyi (2000). For example, Horton and Wallander (2001) examined characteristics of mothers raising children with a chronic physical condition, a situation which has frequently been associated with psychological distress. Specifically, the authors were interested in whether reported hope and social support could protect such caregivers from stress. They found that hope does indeed serve as a factor associated with decreased stress, and thus they encourage those creating programs for caregivers in such situations to include a component on building realistic hope as one of many coping strategies.

In another study, Hunter and Csikszentmihalyi (2003) sought to explore the relationship between positive psychological variables (in this case, hope for the future, self-esteem, and locus of control) and adolescents' everyday reported level of interest versus boredom. Utilizing the same experience sampling method (ESM) mentioned earlier, participants were instructed to rate how excited or bored they were with activities preceding a tone, occurring eight times randomly throughout each day for a one-week period. Results reported by Hunter and Csikszentmihalyi (2003) strongly indicated that those participants rating their activities as more interesting than boring scored higher on measures of self-esteem and optimism. Students reporting more interest in their activities also tended to identify an internal locus of control, whereas those reporting more boredom reported an external locus of control.

Furthermore, part of psychological flourishing as described by Seligman, Rashid, & Parks (2006) incorporates the idea of a pleasant, engaged, and meaningful life. From our concept of mindfulness, then, it seems clear that living an engaged life may overlap with Kabat-Zinn's (2003) notion of mindfulness as paying attention purposefully and in the present moment. These findings also carry important theoretical implications for research involving mindfulness, since it was mentioned earlier that mindfulness has been associated not only with decreased psychopathology (Bernstein & Tanay, 2011), negative affect (Schroevers & Brandsma, 2010), and neuroticism (Borynski, 2007; Fetterman, Robinson, Ode, & Gordon, 2010), but also with increased psychological health as indicated by positive affect (Giluk, 2009) and quality of life (Nyklíček & Kuijpers, 2003). Mindfulness, then, may fit into the equation relating personality, elements of

psychopathology, and psychological flourishing – all aspects under investigation in the current study.

CHAPTER VI

CURRENT STUDY: GOALS AND HYPOTHESES

Whereas information reviewed in the introduction makes clear that relationships exist between the concept of mindfulness (via self-report measures of mindfulness) and decreased psychopathology, increased psychological flourishing, and personality characteristics, the mechanism through which mindfulness fits into the puzzle is less clear. Although there is a multitude of literature exploring relationships between the concept of mindfulness and personality characteristics identified by Big Five personality measures, none of the literature reviewed was able to delve into the detail which might shed the most light on both the multi-faceted nature of Big Five personality and the multi-faceted nature of mindfulness. Specifically, it is possible that important relationships between Big Five personality traits and mindfulness might be diluted by the averaging of sub-facets into larger constructs. By examining Big Five personality characteristics at the facet level, as well as their interaction with the five facets of mindfulness (as indicated by the Five Facet Mindfulness Questionnaire, FFMQ), it was hoped that new relationships would be elucidated, shedding light on the mechanisms by which mindfulness might mediate the relationship between personality and psychological outcomes such as hopefulness, quality of life, positive affect, and negative affect. The four goals of this study, then, included 1) identifying relationships between mindfulness and Big Five personality traits, 2) examining mindfulness as a mediator between personality and persons' psychological states, and 3) exploring how mindfulness facets map onto Big Five personality trait domains and facets.

Regarding the first goal of identifying relationships between mindfulness and Big Five personality traits, several relationships were hypothesized to exist. Specifically, because West (2008) found Openness to be related to mindfulness and because persons open to experiences could theoretically be more inclined to observe thoughts and feelings, it was hypothesized that the International Personality Item Pool (IPIP) five factor personality inventory's Openness would correlate positively and significantly with the Observing facet of the FFMQ. Because Giluk (2009) found Conscientiousness to be another personality factor related to mindfulness, it was hypothesized that those scoring highly on the Act with Awareness facet of the FFMQ would also score highly on two facets of IPIP Conscientiousness, namely Self-discipline and Cautiousness. Because Germer (2005) suggests that Nonjudging of one's inner experience can build self-compassion, which in turn can be generalized to others, it was hypothesized that the Nonjudging facet of the FFMQ would be positively correlated with IPIP Friendliness, Cheerfulness, and Sympathy. Finally, because numerous researchers have found mindfulness to be inversely related to neuroticism, and because decreased reactivity may be associated with mood regulation, it was hypothesized that the Nonreacting facet of the FFMQ would correlate negatively with the Anxiety, Anger, and Immoderation facets of IPIP Neuroticism.

Regarding the second goal of the study, two hypotheses were formed. First, because West (2008) found mindfulness to be related to openness, and because Arch and Craske (2006) have found it related to positive affect, it was hypothesized that mindfulness would serve as a mediator between Openness and psychological flourishing. Second, because Giluk (2009) found mindfulness to be inversely related to Neuroticism,

and because Schroevers and Brandsma (2010) found mindfulness to be inversely related to psychological distress, it was hypothesized that mindfulness would serve as a mediator between Neuroticism and psychological distress.

Regarding the third goal of the study, facets of IPIP five factor personality were mapped onto facets of FFMQ mindfulness in an exploratory factor analysis. Exploring relationships from the resulting factors was hypothesized to shed light on the possibly shared nature of personality and mindfulness.

CHAPTER VII

METHODS

Participants

Approval for this study was obtained from The University of Southern Mississippi's Institutional Review Board (see Appendix A). Three hundred twenty-five participants, aged 18 or older, were recruited with community flyers, newspaper advertisements, and the university's online subject pool. The purpose of varying recruitment methods was to increase the demographic diversity of the sample. Of these participants, 247 persons who identified themselves as non-meditators were used for all analyses involving the FFMQ. The decision to exclude those persons indicating past meditation experience came after results failed to indicate a unified mindfulness factor and because of mention made by Baer et al. (2008) suggesting that the factor structure of the FFMQ in part depends on the meditation experience of the persons completing the measure. By including only persons without meditation experience, it was hoped that the measure might produce a more unified construct. Of the sample, 241 were students and six were from the community, with an average age of 21.8 years. Demographics are summarized in Table 1.

Table 1

Descriptives of Demographic Variables

Variable	N	Percentage
Gender		
Male	48	19%
Female	199	81%

Table 1 (continued).

Variable	N	Percentage
Race		
African-American	94	38%
Asian	1	0.40%
Caucasian	137	56%
Hispanic	5	2%
Native American	2	1%
Other	8	3%
Education		
High School/GED	44	18%
Some College	140	57%
College	60	24%
Graduate School	2	1%
Relationship Status		
Single	216	87%
Married	20	8%
Divorced	6	2%
Separated	1	0.40%
Widow	0	0%

Measures

Demographics Questionnaire

A demographic questionnaire was designed to obtain basic demographic info, such as gender, race, age, education level, and past experience with meditation. The demographic questionnaire used is included in Appendix B.

The Satisfaction With Life Scale (SWLS)

The SWLS (Diener, Emmons, Larsen, & Griffin 1985) was developed to assess persons' self-reported current satisfaction with the way their lives are at the time of test-

taking. Diener and colleagues (1985) report the short measure uses five items to tap into a single-factor of life satisfaction, with factor loadings for the items ranging from .61 to .84 and inter-item correlations ranging from .57 to .75. A coefficient alpha of .913 was found using the measure in the present study. Additionally, Diener et al. (1985) report that the SWLS correlates well with other measures of well-being and shows discriminant validity when compared to the Bradburn Negative Affect Scale.

The Hope Scale

This measure (Snyder et al., 1991) was developed as a short measure of the cognitive and motivational components of hopefulness, through a set of eight, 4-point Likert-rated items (with an additional four *filler* questions). Items are reported to tap into hope via *pathways* (i.e, the perception that actions will yield positive outcomes) and *agency* (i.e., the perception that one is well-suited to deal with problems that might arise in every day life). Snyder and colleagues (1991) state that factor analyses support this two-factor structure for the measure, corresponding to the notions of *pathway* items and *agency* items, and report good reliability with Cronbach's alphas ranging from .74 to .84. Coefficient alphas found in this study are presented in Table 2.

Table 2

Coefficient Alphas for the Hope Scale

Scale	Coefficient Alpha	N
1. Hope Total	.751	242

Table 2 (continued).

Scale	Coefficient Alpha	N
2. Pathways	.651	244
3. Agency	.786	244

The Five Facet Mindfulness Questionnaire

The FFMQ (Baer et al., 2006) was developed through a joint factor analysis of items from the Mindful Attention Awareness Scale (MAAS), the Freiburg Mindfulness Inventory (FMI), the Kentucky Inventory of Mindfulness Skills (KIMS), the Cognitive and Affective Mindfulness Scale (CAMS), and the Mindfulness Questionnaire (MQ). Results of this factor analysis revealed five factors (Observing, Describing, Acting with Awareness, Non-judging, and Non-reacting). In a follow-up, Baer et al. (2006) reported that each of the five facets loaded significantly onto a single higher-order construct of mindfulness (coefficients ranging from 0.34 to 0.72) and resulted in a model with an excellent fit (CFI = .96). Baer et al. (2008) report coefficient alphas for individual subscales showing good internal consistency (Observing = .83, Describing = .91, Acting = .87, Nonjudging = .87, Nonreactivity = .75). Coefficient alphas for the scale found in this study are listed in Table 3.

Table 3

Coefficient Alphas for the Five Facet Mindfulness Questionnaire

Facet	Coefficient Alpha	N
1. Overall	.837	211
2. Observe	.793	243
3. Nonreact	.741	240
4. Describe	.833	236
5. Act with Awareness	.862	232
6. Nonjudge	.848	234

The World Health Organization Quality of Life – Brief scale (WHOQOLBREF)

This measure (WHOQOL Group, 1998) consists of 26 self-report items for which test takers respond to Likert-type questions, allowing the test-taker to rate satisfaction with life circumstances related to four domains of well-being (physical health, psychological health, social relationships, and environment). The WHOQOL Group (1998) reports psychometric properties from a meta-analysis incorporating data from over 4,000 test-takers demonstrating good internal consistency (Cronbach's alphas ranging from 0.66 to 0.82 for individual domains) and good test-retest reliability (ranging between 0.66 and 0.87). Coefficient alphas obtained by the present study for the WHOQOL and domains are listed in Table 4.

Table 4

Coefficient Alphas for the WHOQOL

Scale	Coefficient Alpha	N
1. Overall	.929	218
2. Domain 1	.790	236
3. Domain 2	.802	238
4. Domain 3	.692	241
5. Domain 4	.822	239

The Positive Affect Negative Affect Schedule (PANAS)

This measure (Watson, Clark, & Tellegen, 1988) was developed as a measure of two constructs, namely positive affect and negative affect. The self-report measure consists of 10 items for positive and 10 items for negative affect, each item presenting the test-taker with a 5-point Likert-type response format ranging from “very slightly or not at all” to “very much.” Crawford and Henry (2004) provide a psychometric evaluation of the PANAS utilizing a non-clinical sample of over 1,000 United Kingdom adults. Results of a confirmatory factor analysis supported the two-factor nature of the measure, allowing Positive Affect and Negative Affect to correlate ($r = -.297$) and have correlated errors (RCFI = 0.94, SRMR = .052, RMSEA = .058). Reliability was also estimated to be good, with a Cronbach’s alpha of 0.89 for the Positive Affect scale and 0.85 for the

Negative Affect scale. Coefficient alphas obtained for the PANAS in this study are listed in Table 5.

Table 5

Coefficient Alphas for the Positive and Negative Affect Scale

Scale	Coefficient Alpha	N
1. Positive Affect	.751	242
2. Negative Affect	.801	246

The Depression Anxiety Stress Scales - 21 (DASS-21)

The DASS-21 is a short form of Lovibond and Lovibond's (1995) 42-item DASS, and is a self-report measure with Depression, Anxiety, and Stress subscales. Specifically, Lovibond and Lovibond (1995) were interested in teasing apart general psychological distress, differentiating between self-reported depression, physiological arousal associated with anxiety, and psychological tension associated with stress. Henry and Crawford (2005) examined the validity and reliability of the short version (consisting of 21 items) with almost two thousand non-clinical adults in the United Kingdom. The authors report excellent reliability of scores from the subscales Cronbach's alphas ranging from 0.82 to 0.90. The overall factor structure of the measure was also supported, with a confirmatory factor analysis providing strong support for one large factor (negative affect) and three smaller factors (depression, anxiety, and stress). Coefficient alphas observed in the DASS-21 for this study are reported in Table 6.

Table 6

Coefficient Alphas for the Depression Anxiety Stress Scales

Scale	Coefficient Alpha	N
1. Total Score	.975	205
2. Depression	.954	229
3. Anxiety	.928	235
4. Stress	.933	230

The IPIP Five-Factor Personality Test

The IPIP (Goldberg, 1999) five-factor personality test is a self-report measure of the Big Five Personality domains of Extraversion, Neuroticism, Openness to Experience, Agreeableness, and Conscientiousness. The IPIP five-factor personality test includes 300 Likert type items, which test-takers rate on a 5-point scale (from 1, “Very Inaccurate” to 5, “Very Accurate”) as to how closely the test-taker believes the statement describes them. The five domains can be further broken down, each yielding six facet-scale scores (see Table 7 for a list of the facet constructs associated with each of the five domains). Hampson and Goldberg (2006) report test-retest reliability (with a 2.8 year time interval) for the IPIP five-factor personality test of 0.70 to 0.79 as well as an average convergent validity coefficient between NEO-PI-R domains and respective IPIP five-factor personality test domains of 0.73. Coefficient alphas for the IPIP five factor personality test obtained in the present study are reported in Table 8.

Table 7

Domains and Facets of the IPIP Five-Factor Personality Test

Extraversion	Neuroticism	Openness	Agreeableness	Conscientiousness
Friendliness	Anxiety	Imagination	Trust	Self-Efficacy
Gregariousness	Anger	Art Interests	Morality	Orderliness
Assertiveness	Depression	Emotionality	Altruism	Dutifulness
Activity Level	Self-Conscious	Adventure	Cooperation	Achievement
Excitement	Immoderation	Intellect	Modesty	Self-Discipline
Cheerfulness	Vulnerability	Liberalism	Sympathy	Cautiousness

Table 8

Coefficient Alphas for the IPIP

Scale	Coefficient Alpha	N
1. Overall IPIP	.941	154
2. Neuroticism	.927	216
3. Extraversion	.914	207
4. Openness	.897	221
5. Agreeableness	.918	211
6. Conscientiousness	.951	216

Procedures

Recruited participants were directed to a survey website, where they were presented with an informed consent document (see Appendix C), including information regarding possible risks and benefits of participation. Participants were given the option to discontinue participation at any point during the study. Upon giving informed consent, participants were then presented with the Demographics Questionnaire, the FFMQ, the WHOQOLBREF, the PANAS, IPIP five-factor personality test, the Hope Scale, the SWLS, and DASS-21. Names were obtained from students participating via the university's subject pool (so that they could receive research participation credit), but names were removed from the questionnaire responses and maintained separately. The data were kept confidential until the database was de-identified, and names were deleted once research credit had been granted for participation.

It was estimated that the questionnaires took approximately one hour to complete. After completing the questionnaires, participants were thanked for their participation and were given the opportunity to opt-in for a chance to be randomly chosen for one of ten \$20 Wal-Mart gift certificates. Participants who wished to opt in for the drawing were required to provide their email address so that winners could be contacted, but this information was not associated with their previously completed questionnaires or demographic information.

CHAPTER VIII

RESULTS

Correlation Analyses

The first goal of the study was to identify relationships between mindfulness, as measured by the Five-Factor Mindfulness Questionnaire, and Big Five Personality traits, as measured by the IPIP five-factor personality test. Specifically, data was examined by constructing a correlation matrix (Table 9; predicted relationships are underlined; significant correlations are bolded) with facet and domain scores entered as variables. From this analysis, I predicted that strong positive relationships would emerge between Sympathy, Friendliness, and Cheerfulness personality characteristics and the Nonjudging facet of mindfulness; Openness to Experience would be positively related to the Observing facet of mindfulness; the Self-Discipline and Cautiousness facets of Conscientiousness would be related to the Act with Awareness facet of mindfulness; Anxiety, Anger, Depression, and Immoderation facets of Neuroticism would be negatively related to the Non-Reacting facet of mindfulness.

Table 9

Correlation Matrix between FFMQ Facets and IPIP Personality

Scale	Observe	Describe	Act	Nonjudge	Nonreact
Extraversion	0.109	0.390	0.109	0.079	0.103
Friendliness	0.012	0.322	0.250	<u>0.185</u>	0.114
Gregariousness	-0.037	0.228	0.130	0.149	0.027
Assertiveness	0.127	0.390	0.211	0.107	0.057
Activity Level	0.207	0.233	0.104	-0.045	0.018
Seek Excitement	0.160	0.146	-0.207	-0.088	-0.013
Cheerfulness	0.179	0.342	0.052	<u>0.104</u>	0.233

Table 9 (continued).

Scale	Observe	Describe	Act	<i>Nonjudge</i>	Nonreact
Openness	0.380	0.384	0.122	<u>0.021</u>	0.063
Imagination	0.240	0.11	-0.186	<u>-0.078</u>	0.096
Art Interests	0.327	0.34	0.126	<u>0.057</u>	0.112
Emotionality	0.342	0.325	0.014	<u>-0.118</u>	-0.052
Adventurousness	0.192	0.374	0.253	<u>0.169</u>	0.131
Intellect	0.296	0.475	0.267	<u>0.064</u>	0.095
Liberalism	0.053	-0.088	-0.036	<u>-0.043</u>	-0.205
Agreeableness	0.124	0.231	0.275	<u>0.113</u>	0.201
Trust	-0.014	0.208	0.198	<u>0.231</u>	0.159
Morality	0.128	0.25	0.331	<u>0.12</u>	0.127
Altruism	0.259	0.382	0.216	<u>0.072</u>	0.201
Cooperation	0.072	0.197	0.235	<u>0.136</u>	0.204
Modesty	0.008	-0.189	0.009	<u>-0.091</u>	0.09
Sympathy	0.182	0.326	0.21	<u>0.079</u>	0.12
Conscientiousness	0.189	0.395	0.472	<u>0.196</u>	0.209
Self-Efficacy	0.195	0.418	0.355	<u>0.229</u>	0.197
Orderliness	0.039	0.197	0.275	<u>0.04</u>	0.058
Dutifulness	0.17	0.346	0.308	<u>0.134</u>	0.256
Achievement	0.286	0.427	0.325	<u>0.071</u>	0.165
Self-Discipline	0.188	0.398	0.503	<u>0.223</u>	0.121
Cautiousness	0.102	0.252	0.445	<u>0.224</u>	0.222

Note. Predicted correlations are italicized and underlined; statistically significant relationships are bolded.

While Sympathy and Cheerfulness personality facets did not correlate with the Nonjudging mindfulness facet ($r = .079$, and $r = .104$, ns, respectively), a positive and significant correlation was found between the friendliness personality facet and nonjudging ($r = .185$, $p < .01$). Openness to experience from the IPIP correlated positively and significantly with the Observing facet of the FFMQ ($r = .380$, $p < .001$). As predicted, both Self-discipline and Cautiousness IPIP facets positively and significantly correlated with the Act with Awareness facet of the FFMQ ($r = .503$, $p <$

.001 & $r = .445, p < .001$, respectively). Finally, support was found for Anxiety, Anger, Depression, and Immoderation facets of IPIP Neuroticism negatively and significantly correlating with the Non-Reacting facet of FFMQ mindfulness ($r = -.317, p < .001$; $r = -.367, p < .001$; $r = -.285, p < .001$; $r = -.273, p < .001$, respectively).

Mediation Analyses

The second and third goals of this project were aimed at examining mindfulness as a possible partial mediator of mindfulness between Openness and Flourishing as well as between Neuroticism and Distress. Both of these analyses were completed using Structural Equation Modeling. Due to apparent anomalies in the data, however, certain measures had to be removed in order to obtain an interpretable model. The original model tested consisted of Openness (defined by the 6 Openness facets of the IPIP) and Neuroticism (defined by the six Neuroticism facets of the IPIP) with a causal path to a unitary mindfulness construct (defined by the five facets of the FFMQ), which in turn had causal paths to Psychological Distress (defined by DASS-21, PA scale of the PANAS) and Psychological Flourishing (defined by the WHOQOL, Snyder Hope Scale, and PA scale of the PANAS). Figure 1 depicts the original model.

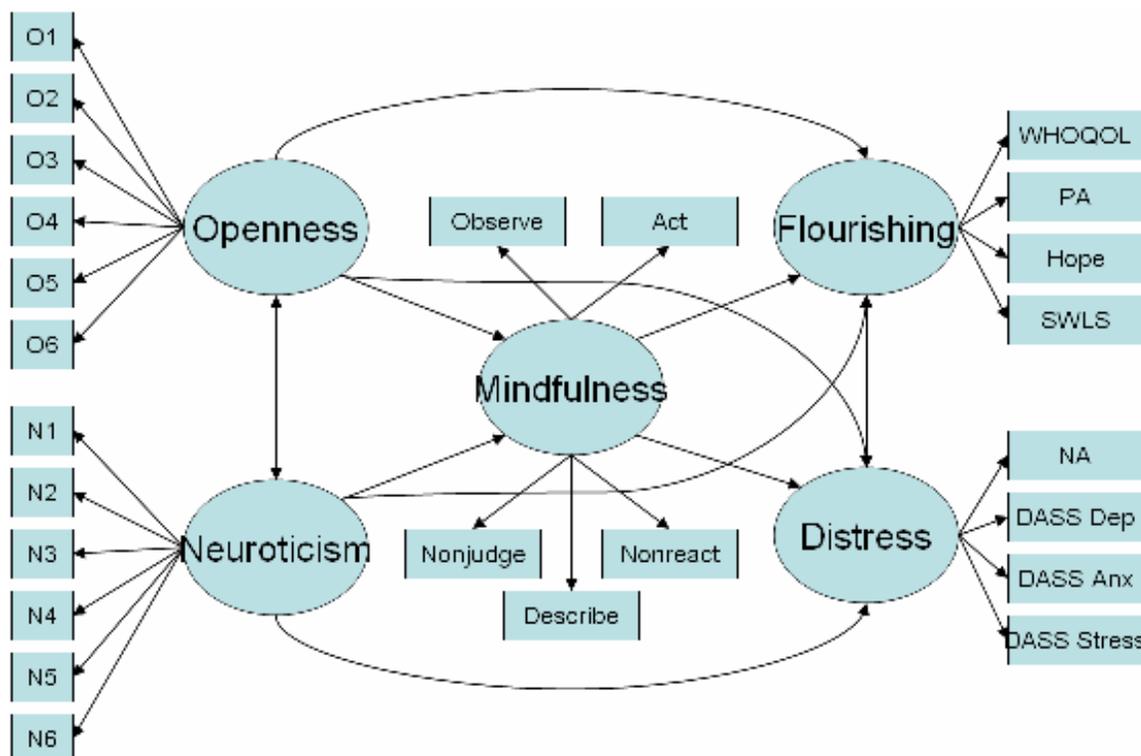


Figure 1. Original Model for SEM.

Model Modifications

Because the hypothesized model depicted above was unable to converge, exploratory factor analyses of each latent variable in the model were performed to aid in the re-specification of the measurement model. No alterations to model paths or hypotheses were made. Instead, the changes made to the measurement model were limited to the inclusion or exclusion of indicators used.

First, a principal axis factoring of responses to the FFMQ items was conducted, which failed to provide evidence for a unitary latent mindfulness factor. Instead, two-factors emerged: *Mindfulness 1* consisting of Observe, Non-React, and Describe; and *Mindfulness 2* consisting of Act with Awareness, Nonjudge, and Describe (see Table 10).

Table 10

Principal Axis Factoring EFA of FFMQ Facets

Facet	Mindfulness 1	Mindfulness 2
1. Observe	.747	-.270
2. Nonreact	.547	-.088
3. Describe	.603	.506
4. Act	-.090	.739
5. Nonjudge	-.143	.753

Next, principal axis factoring with promax rotation of the latent Openness construct failed to support O6 (Liberalism) for inclusion as an indicator of Openness (see Table 11).

Table 11

Principal Axis Factoring EFA of Openness

Facet	Openness
1. O1 (Imagination)	.619
2. O2 (Artistic Interest)	.763
3. O3 (Emotionality)	.491
4. O4 (Adventurousness)	.540
5. O5 (Intellect)	.515
6. O6 (Liberalism)	.109

Third, an EFA of the latent Flourishing construct revealed poor loading from the Snyder Hope Scale (see Table 12), leading to its removal as an indicator. Once the Snyder Hope Scale was removed, the researcher decided to avoid having a latent construct of Flourishing defined by merely three variables, and chose to use individual domains of the WHOQOL instead of a total WHOQOL score. A subsequent principal axis factoring of the latent Flourishing construct was conducted, which suggested a two-factor solution (see Table 13) with SWLS failing to load onto the primary factor and leading to its exclusion as an indicator.

Table 12

Principal Axis Factoring EFA of Psychological Flourishing

Scale	Factor Loading
1. WHOQOL-BREF	.506
2. SWLS	.421
3. PA	.217
4. Snyder Hope Scale	.107

Table 13

Principal Axis Factoring EFA of Psychological Flourishing (sans Hope)

Scale	Factor 1	Factor 2
1. WHOQOL Domain 1	1.021	-.135

Table 13 (continued).

Scale	Factor 1	Factor 2
2. WHOQOL Domain 2	.540	.397
3. WHOQOL Domain 3	.302	.358
4. WHOQOL Domain 4	.519	.312
5. PA	.565	-.108
6. SWLS	-.183	.760

These changes were made and the model was run using MPlus (Version 5). The researcher expected modification indices to show if paths needed to be freed. The following modifications were made based on these analyses. Some modification indices were statistically significant and posed theoretical problems. For example, N6 (Vulnerability) was removed from the model after examination of modification indices suggested it was an indicator of Psychological Flourishing with an expected parameter of .325. When the model was run again without N6, N5 (Immoderation) was found to correlate significantly with two indicators of mindfulness. After removing N5, the model was run again, and a significant modification index suggesting N4 (Self-Consciousness) as an indicator of Openness was found. After N4 was removed and the model was rerun, modification indices suggested the Stress scale of the DASS loaded poorly onto the latent construct of Distress, preferring to load instead onto the latent construct of Neuroticism. Removing the Stress scale of the DASS resulted in the model depicted in Figure 2, and acceptable goodness of fit coefficients were obtained (CFI = .907, RMSEA = .069).

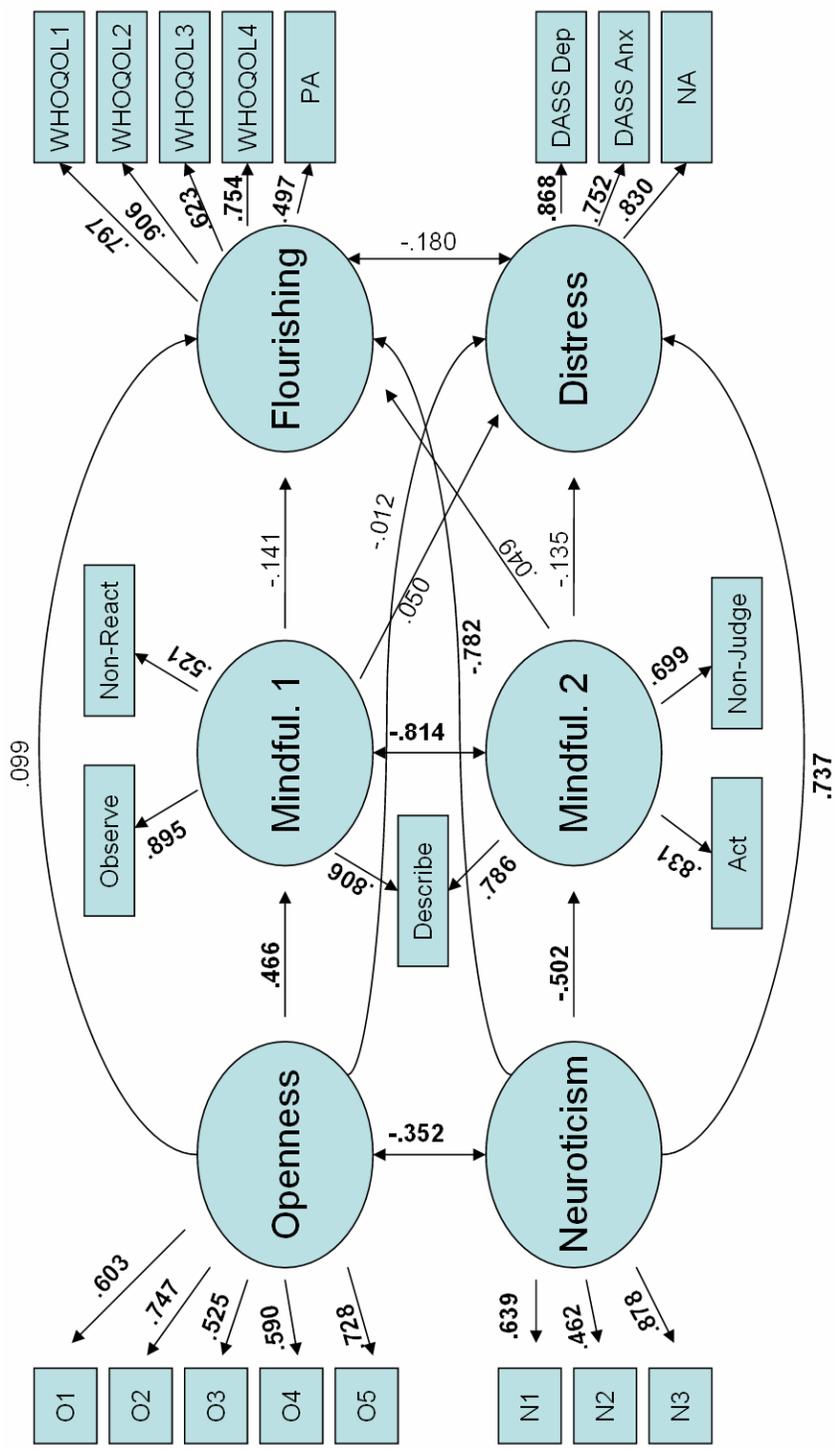


Figure 2. Beta Weights for Structural Equation Model (significant weights bolded).

Results derived from this Structural Equation Model, however, failed to support hypotheses regarding partial mediation by Mindfulness 1 between Openness and

Flourishing, or partial mediation by Mindfulness 2 between Neuroticism and Distress. The strongest relationships existed between Neuroticism and Flourishing ($\beta = -.782, p < 0.001$), followed by that between Neuroticism and Distress ($\beta = 0.737, p < 0.001$). The residual covariance left over between Mindfulness 1 and Mindfulness 2 was also highly, and inversely, significant ($\beta = -0.814, p < 0.001$).

Exploratory Factor Analysis

The fourth goal of the proposed study was to explore how mindfulness facets map onto Big Five personality traits using an Exploratory Factor Analysis. Specifically, an Exploratory Factor Analysis was conducted, which included all Big Five facet subscales and all Mindfulness facet subscales in one analysis. The facets of the IPIP five-factor personality test were mapped onto the five facets of mindfulness from the FFMQ at the multivariate level.

Principal Axis Factoring with a Promax rotation and using Cattell's scree test identified a 6-factor structure. Eigenvalues for the first nine components, as well as the percentage of variance accounted for by each component, are listed in Table 14. The rotated pattern coefficients are presented in Table 15.

Table 14

Initial Eigenvalues from Exploratory Factor Analysis

Factor	Eigenvalue	% of Variance
1. Component # 1	9.627	27.505

Table 14 (continued).

Factor	Eigenvalue	% of Variance
2. Component # 2	4.153	11.865
3. Component # 3	3.497	9.992
4. Component # 4	2.37	6.771
5. Component # 5	2.08	5.943
6. Component # 6	1.619	4.625
7. Component # 7	1.231	3.516
8. Component # 8	1.081	3.09
9. Component # 9	0.889	2.539

The first factor consists of a mixture of IPIP Extraversion and Conscientiousness facets (i.e., Self-discipline, Orderliness, Achievement-striving, Assertiveness, Activity level, Dutifulness, and Self-efficacy). Elements making up this factor seem to be suggesting measurement of achievement striving within the Western, individualist tradition of citizenship. The second factor consists of the six facets comprising IPIP Neuroticism (Vulnerability, Anxiety, Depression, Anger, Self-Consciousness, and Immoderation), as well as the FFMQ facet of Non-reacting. The third factor arises from the IPIP facets of Cooperation, Modesty, Morality, and Cautiousness, seeming to resemble many aspects associated with Social Conscience. The fourth factor is perhaps the most heterogeneous, consisting of the IPIP facets Imagination, Intellect, Artistic

Interests, Adventurousness, Emotionality, Sympathy with the FFMQ facets Observe and Describe. These scales may collectively be getting at an underlying concept related to Curiosity. The fifth factor consists of IPIP facets from the Extraversion and Agreeableness scales (i.e., Friendliness, Cheerfulness, Trust, Altruism, and Gregariousness), suggesting an underlying concept of Sociability. The sixth and final factor consists of the FFMQ Nonjudging and Acting with Awareness facets, and thus may be capturing the concept of Equanimity, based on action without judgment.

It is interesting to note, also, that facets of the FFMQ loaded on Factors 2 (Neuroticism), 4 (Curiosity), and 6 (Equanimity). The finding that Non-reacting correlates negatively with Neuroticism makes sense given the numerous studies finding inverse relationships between neuroticism and mindfulness. The existence of the sixth factor with the two FFMQ facets of Nonjudging and Acting with Awareness is commensurate with what would be expected given the factor analyses by Baer et al. (2008), but the existence of another factor consisting of IPIP Openness, Agreeableness, and FFMQ facets of Observe and Describe was not expected.

Table 15

Exploratory Factor Analysis Rotated Component Matrix

Facet	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Orderliness (C2)	0.769	0.138	0.088	-0.210	0.058	-0.041
Self-discipline (C5)	0.767	0.088	-0.025	-0.021	-0.088	0.099
Assertiveness (E3)	0.680	-0.450	0.088	-0.004	0.262	0.012
Achievement (C4)	0.676	0.232	0.036	0.110	0.166	-0.090

Table 15 (continued).

Facet	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
Activity level (E4)	0.596	-0.017	0.277	0.137	-0.025	0.004
Self-efficacy (C1)	0.434	0.092	-0.277	0.160	0.258	-0.048
Cooperation (A4)	-0.004	0.797	-0.090	0.025	0.186	0.091
Modesty (A5)	-0.005	0.689	0.199	-0.055	-0.059	-0.118
Morality (A2)	0.263	0.637	-0.023	0.007	0.150	0.084
Seek Excitement (E5)	0.000	-0.625	-0.011	0.311	0.367	-0.142
Cautiousness (C6)	0.499	0.577	-0.090	-0.031	-0.244	0.126
Self-conscious (N4)	-0.295	0.526	0.508	0.170	-0.185	-0.079
Dutifulness (C3)	0.444	0.524	-0.013	0.135	0.186	-0.106
Liberalism (O6)	-0.235	-0.340	0.098	0.321	-0.200	0.176
Anxiety (N1)	0.289	0.125	0.882	0.095	-0.114	-0.100
Vulnerability (N6)	-0.031	0.096	0.840	-0.121	0.030	0.041
Depression (N3)	-0.101	-0.040	0.675	0.186	-0.309	-0.026
Anger (N2)	0.415	-0.345	0.653	-0.071	-0.127	-0.028
FFMQ_Non-reacting	-0.028	0.127	-0.638	0.070	-0.045	-0.444
FFMQ_Describe	0.232	-0.172	-0.346	0.343	0.003	0.130
Immoderation (N5)	-0.307	-0.280	0.318	0.102	0.250	-0.234
Intellect (O5)	0.154	-0.151	-0.166	0.817	-0.368	0.127
Imagination (O1)	-0.246	-0.064	0.028	0.801	0.095	-0.009
Artistic Interests (O2)	-0.023	0.049	0.072	0.679	0.153	0.090
Adventerousness(O4)	-0.011	-0.165	-0.143	0.511	0.201	0.124
Emotionality (O3)	0.196	0.077	0.372	0.505	0.197	-0.036
Sympathy (A6)	-0.092	0.375	0.093	0.406	0.275	0.200
Friendliness (E1)	0.153	-0.019	-0.073	-0.069	0.734	0.111
Cheerfulness (E6)	-0.076	0.124	-0.182	0.108	0.649	-0.149
Gregariousness (E2)	0.246	-0.406	0.048	-0.039	0.623	0.074
Trust (A1)	-0.227	0.256	-0.204	0.092	0.529	0.160
Altruism (A3)	0.235	0.400	0.089	0.229	0.470	-0.108
FFMQ_Nonjudge	-0.161	-0.039	-0.074	0.251	0.074	0.758
FFMQ_Act	0.345	0.111	0.014	-0.026	-0.072	0.728
FFMQ_Observe	0.241	-0.076	-0.194	0.401	-0.310	-0.501

Note. Factor 1 is Citizenship; Factor 2 is Social Conscience; Factor 3 is Neuroticism; Factor 4 is Curiosity; Factor 5 is Sociability;

Factor 6 is Equanimity.

CHAPTER IX

DISCUSSION

The present study first set out to examine relationships between facets of FFMQ mindfulness and IPIP personality, secondly and thirdly to investigate the possibility of mindfulness mediating the relationships between Openness and Flourishing as well as Neuroticism and Distress, and fourthly to explore the possibility of underlying factors made up of both personality and mindfulness facets. Regarding the first goal, multiple significant relationships were found between FFMQ Mindfulness facets and IPIP personality facets. Among the predicted relationships discovered, significant correlations were found between IPIP Friendliness and FFMQ Nonjudging, IPIP Openness and FFMQ Observing, IPIP Self-discipline and Cautiousness with FFMQ Acting, as well as IPIP Anxiety, Anger, Depression, and Immoderation with FFMQ Non-reacting. Support was not found for a relationship between IPIP Sympathy and Cheerfulness with FFMQ Nonjudging.

Regarding the second and third goals, mediation analyses using structural equation modeling failed to support the hypothesized mediation between Openness and Flourishing or between Neuroticism and Distress by Mindfulness. Once the structural equation model identified earlier was altered to achieve good fit so further analyses could be performed, it appears that much of the variance in the model was usurped by the latent Neuroticism variable. This seems to be supported given that the largest and most significant relationships in the model were those between Flourishing and Distress with Neuroticism.

Furthermore, the use of structural equation modeling posed its own difficulties, as the model that was originally to be used for the analyses did not have adequate fit, largely in part due to the lack of a unitary latent mindfulness construct. Difficulties getting the data from the FFMQ to converge on a single unitary Mindfulness construct were unexpected and are not commensurate with research results provided by Baer et al. (2006) and others who have since used the measure. Any number of anomalies (e.g., this project's participant pool differing in some characteristic from those used in the original studies of the FFMQ, utilization of web-based data collection) could be responsible, and may warrant further investigation. Based on the results of this study, more research is needed on the latent structure of mindfulness.

Regarding the fourth goal, the six factors found (Citizenship, Social Conscience, Neuroticism, Curiosity, Sociability, and Equanimity) raise interesting questions pertaining to the relationship between personality and mindfulness. While it is unsurprising that FFMQ Nonjudging and Acting with Awareness should comprise the same factor of Equanimity, the strong negative loading of FFMQ Observing was unexpected. It does, however, make sense with the mention by Baer et al. (2006) that non-meditators' responses to items of the FFMQ Describe scale often fail to correlate with other facets of the FFMQ. The inclusion of FFMQ Describe and FFMQ Observe loading with facets of IPIP Openness and IPIP Agreeableness onto a common factor of Curiosity was unexpected. This relationship could suggest an inquisitive component to mindfulness, as one who is open to nonjudgmental and purposeful observation of their environment may also be intellectually curious, open to exploring the world around them. This in and of itself could perpetuate further research questions, including how those

persons scoring highly on a measure of mindfulness attempt to solve novel problems in their environment. This could have clinical applications, too, as persons scoring highly on a measure of mindfulness may be more receptive to exploration of physical and mental phenomena within the therapy session, possibly making them less likely to engage in avoidant type behaviors.

Potential weaknesses in this research include the large number of participants that were excluded from analyses with the FFMQ. While Baer et al. (2006) note the difference in factorial structure of the FFMQ depending on the meditation experience of persons responding to the items, this fact may have created difficulty in the analyses used for this study. By excluding persons with meditation experience in order to help solidify the factorial structure of the FFMQ, some power was lost in the analyses. The power lost due to these exclusions, however, was offset by the need to find a model with acceptable fit for the analyses utilizing structural equation modeling.

Along these lines, the additional exclusion of the SWLS, Snyder Hope Scale, and subscales of some other measures in order to achieve appropriate fit indices for structural equation modeling leads to more questions. It is this author's belief that many of the anomalies observed in the data might have been the result of participants not paying adequate attention to item content of the measures. This could have been more prevalent because a web-based administration was utilized for the study, and without validity indicators, it is difficult to rule this out as a possibility. Another reason could lie in differences between the population sampled for this study compared with populations sampled for the developments of the measures. This latter speculation could explain why a unitary, latent mindfulness factor was not found, instead having to split the construct

into two separate mindfulness factors. More research investigating both the characteristics of samples responding to FFMQ items and the method of administering the measure could shed light on this.

One of the inherent benefits of the present study is the uniqueness of the endeavor. Namely, that the relationship between Big Five personality and mindfulness has not been thoroughly examined at the facet level up until this point. These results do shed light on relationships previously only hypothesized. With this in mind, it is hoped that the study can lay the groundwork for further research, examining possible mechanisms by which mindfulness associates with resilience and personality. Understanding the *how* of mindfulness benefiting mental health could be important when planning mindfulness-based interventions. For example, the fact that the Observing facet of mindfulness was not significantly correlated with Neuroticism might suggest that it is less crucial as a skill to be practiced in some therapies. Further study could examine this hypothesis by developing and comparing mindfulness-based interventions focused on exercises promoting Observing versus Non-Reacting (or other mindfulness facet) skills.

Another question that remains is the mechanism by which attributes associated with mindfulness arise. The research presented in this study opens up further research examining the possibility that such mindfulness attributes may arise from personality characteristics identified in the correlational and exploratory factor analyses. For example, the nature of the relationship between facets of mindfulness and the facets of five factor personality could suggest a multidimensional development of the overall mindfulness construct, where some factors develop within the context of social conscience formation, others develop as learned resilience (e.g., non-reacting), and still

others come about from development of curiosity and exploration of one's environment. Mindfulness within a developmental context is something that has little research, but that could benefit clinical psychology if such protective factors were promoted at a young age.

Both as a practice developed and accepted over thousands of years ago and as a relatively new concept to the scientific study of Western psychology, there is clearly a plethora of available research questions which could be further studied, just as the current study attempted to address one of them, the nature of relationships between mindfulness and five-factor personality. While mindfulness's relationship to decreased psychological distress can now be considered a well-documented phenomena, many more questions regarding the mechanisms by which mindfulness is associated with decreased suffering remain. Further understanding of such issues could be useful for implementation and customization of therapy treatments and could even promote a paradigm shift in how suffering is viewed within the human condition. Regardless, mindfulness remains a practice that can be utilized without requiring complete comprehension of underlying mechanisms, but perhaps requiring some acceptance that not all is understandable.

APPENDIX A

IRB APPROVAL FORM

**INSTITUTIONAL REVIEW BOARD**

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.6820 | Fax: 601.266.4377 | www.usm.edu/irb**NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months. Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: **11120603**PROJECT TITLE: **Mindfulness and Facets of Big Five Personality**PROJECT TYPE: **Dissertation**RESEARCHER/S: **Nicholas Schmidt**COLLEGE/DIVISION: **College of Education & Psychology**DEPARTMENT: **Psychology**FUNDING AGENCY: **N/A**IRB COMMITTEE ACTION: **Expedited Review Approval**PERIOD OF PROJECT APPROVAL: **01/04/2012 to 01/03/2013**

Lawrence A. Hosman, Ph.D.
Institutional Review Board Chair

APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE

Please fill out the information or check off the information pertaining to you:

Age: _____ Gender: Male ___ Female ___

Race: Caucasian ___ African American ___ Hispanic ___

Asian ___ Native American ___ Other ___

Highest Level of Education Attained (Circle One):

8th Grade High School/GED Some College College Graduate

How often do you meditate (Circle One):

Never, 1x per 6 months, 1x per month, 1x per week, Multiple times per week

Marital Status:

Single ___ Married ___ Divorced ___ Separated ___ Widow ___

Occupation: _____

Do you receive treatment for psychological difficulties: Yes ___ No ___

If Yes, please describe: _____

Do you currently take medication: Yes ___ No ___

If Yes, please describe: _____

APPENDIX C

INFORMED CONSENT FORM

Consent is hereby given to participate in the study titled: “Mindfulness and Facets of Big Five Personality”

1. Purpose: The purpose of this study is to investigate how the concept of mindfulness is related to facets of personality, psychological distress, and psychological health. The results of this study will help psychologists develop better understand factors which might protect against psychological distress, positive ways of coping with distress, and factors which might lead to increased quality of life.

2. Description of Study: Participation in this study will take approximately 60-90 minutes of your time. Students from the University of Southern Mississippi will be award 1 ½ hours research credit, which will be posted to your account on the SONA Systems Website. Participants who are not currently students at the University of Southern Mississippi will have the opportunity to win a drawing for one of ten \$20 WalMart gift certificates. A total of about 300 persons will participate in this study. During this study, you will complete a selection of online questionnaires that will ask about different aspects of your personality, strategies you tend to use to cope with stress, and beliefs about yourself and the world, as well as a few questions about your background, such as age, gender, and ethnicity.

3. Benefits: If you are currently a student at the University of Southern Mississippi, participating in this study will earn you three (3) experimental research credits, which will either count towards your required research credit, or extra credit, as specified by your instructor. If you are not currently a student at the University of Southern Mississippi, you can choose to be entered in a drawing for one of ten \$20 WalMart gift certificates. There are no other tangible benefits or compensation for participating in this study.

4. Risks: There are no known risks associated with these procedures. However, it is possible that you may experience some discomfort when responding to some of the questions on the questionnaire. However, please keep in mind that your name will only be associated with responses until SONA system credits have been awarded, after which all data will be coded and de-identified. In addition, if there are specific questions that you do not feel comfortable answering, you are free to skip those questions. Skipping such questions will in no way affect the credit you receive for participation. Although highly unlikely, if you become so distressed that you wish to drop out of the study, you may do so without losing credit for participation.

5. Anonymity: Responses to questionnaires and data from this study will initially be associated with your name so that SONA system credits may be awarded. After credits have been awarded, data will be coded and de-identified so that there will be no identifying information associated with any of your responses. In the meantime data will be kept strictly confidential. This consent form, which you will electronically sign if you choose to participate in this study, will be kept separate from your questionnaire responses.

6. Alternative Procedures: Research participation credit for Introductory Psychology courses can also be obtained by writing summaries of psychology journal articles, as specified by your instructor. You may also participate in other research studies listed on SONA Systems, other than this one, if others are available

7. Participant’s Assurance: Strong efforts are made for this study to be designed according to high scientific standards. Participation in this study is voluntary, and participants may withdraw from this study at any time without penalty, prejudice, or loss of benefits. Questions concerning the research should be directed to either Dr. Randy Arnau or Nicholas Schmidt, both available by phone at 601-266-4588.

8. Signatures: By signing below, you are verifying the following: (a) you have read and understand the explanation provided to me, (b) you have had all of your questions answered to your satisfaction, (c) you voluntarily agree to participate in this study, (d) **you are at least 18 years of age**, and (e) you have had the opportunity to print a copy of this consent form.

Signature of Research Participant

____/____/____
Date

Signature of Researcher

____/____/____
Date

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